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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,390	06/01/2001	Brian Jay Doerksen	ICR 97/026	2876

7590 10/28/2003

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EXAMINER

DOROSHENK, ALEXA A

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 10/28/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/872,390

Applicant(s)

DOERKSEN, BRIAN JAY

Examiner

Alexa A. Doroshenk

Art Unit

1764 ~~2~~

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) 18-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-17 and 25-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-38 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2002 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2, 4, 8, 19
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-17 and 25-38, drawn to a cracking heater and delayed coking charge heater, classified in class 422, subclass 198.
- II. Claims 18-24, drawn to a process of heating, classified in class 208, subclass 132.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions of Group II and Group I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process as claimed can be practiced by another materially different apparatus such as an apparatus without a tube bundle comprising a plurality of continuous horizontal tubes parallel to the pair of sides.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Attorney Anne Brookes and Examiner James Arnold on July 15, 2003 a provisional election was made WITH traverse to prosecute the invention of Group I, claims 1-17 and 25-38. Affirmation of this election must be made by applicant in replying to this Office action. Claims 18-24 withdrawn

Art Unit: 1764

from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: exhaust duct 27 from page 9, line 9 and tubes 18' from page 9, line 29. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "A" has been used to designate both a height and a cross-section. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 1764

8. Claims 1-7 and 9-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Barnett et al. (US 6,237,545 B1).

With respect to claim 1, Barnett et al. discloses an apparatus comprising:

an enclosed housing comprising a substantially parallel front and back (26), a pair of substantially parallel sides (24), which are perpendicular to the front and back (26) and a top (78) and bottom (20) providing a continuous enclosure (see figures 1 and 2);

at least one heat source (42, 44);

an exhaust duct/stack (col. 7, lines 8-12) and

a tube bundle (see fig. 2) comprising a plurality of continuous horizontal tubes (36) parallel to the pair of sides (24), the horizontal tubes sequentially linked together by a plurality of tube bends (40) and where at least a portion of the tubes are arranged in a plurality of vertical columns (32, 34) and are horizontally offset from one another (see fig. 2), wherein a feedstock is carried through the tubes beginning at a first end (I-1, I-2, I-3, I-4) of the tube bundle and exiting at a second end (O-1, O-2, O-3, O-4) of the tube bundle.

With respect to claims 10 and 14, Barnett et al. discloses an apparatus comprising:

an enclosed housing comprising a substantially parallel front and back (26), a pair of substantially parallel sides (24), which are perpendicular to the front and back (26) and a top (78) and bottom (20) providing a continuous enclosure (see figures 1 and 2);

an exhaust duct/stack (col. 7, lines 8-12);

a tube bundle (see fig. 2) comprising a plurality of continuous horizontal tubes (36) parallel to the pair of sides (24), the horizontal tubes sequentially linked together by a plurality of tube bends (40) and where at least a portion of the tubes are arranged in a plurality of vertical columns (32, 34) and are horizontally offset from one another (see fig. 2), wherein a feedstock is carried through the tubes beginning at a first end (I-1, I-2, I-3, I-4) of the tube bundle and exiting at a second end (O-1, O-2, O-3, O-4) of the tube bundle, wherein all angles C, as defined as by the claim, are less than 180°; and

where at least one heat source (42) is located on each side of the tube bundle between the tube bundle and the respective side (see figure 2 and col. 5, lines 62- col. 6, line 7).

With respect to claim 2, Barnett et al. further discloses where at least one heat source (42) is located on each side of the tube bundle between the tube bundle and the respective side (see figure 2 and col. 5, lines 62- col. 6, line 7).

With respect to claims 3 and 11, Barnett et al. further discloses where the tubes have a nominal radius and where the tube bends have a radius of greater than twice the nominal radius (col. 5, lines 27-35).

With respect to claims 4 and 12, Barnett et al. further discloses the feedstock is carried through the tubes beginning at the top of the tube bundle (inlets at I-1, I-2, I-3, I-4 as seen at the top in figure 2) and exiting at the bottom of the tube bundle (outlets at O-1, O-2, O-3, O-4 as seen at the bottom in figure 2).

Art Unit: 1764

With respect to claims 5 and 7, Barnett et al. illustrates in figure 2 all angles C, as defined as by the claim, is less than 180° (col. 2, lines 24-27).

With respect to claims 6 and 13, it can be seen in figure 2 of Barnett et al. where within each vertical column adjacent tubes are separated by a distance B, and within each pair of tubes linked by a tube bend there is distance E separating the tubes in the direction of the tube bend, where E is greater than or equal to B.

With respect to claims 9, 15 and 16, Barnett et al. discloses wherein the cracking heater is a coking furnace (col. 11, line 66- col. 12, line3) and where the portion of the tubes in the plurality of vertical columns (16, 18) resides in a radiant heating section (14) of the coking furnace.

With respect to claim 17, Barnett et al. illustrates in figure 2 where the portion of the tubes in the plurality of vertical columns (34, 36) extends the entire height of the tube bundle.

With respect to claim 25, Barnett et al. discloses an apparatus for heating a coker feedstock comprising:

- a first convection section (12);

- a second radiant section (14) adjacent to the first convection section (12) so as to transmit heat to a feedstock by radiant means (col. 5, lines 27-52);

- a heating conduit (16, 18) in the radiant section (14) comprised of a plurality of horizontal heater tubes (34, 36) located in the center of the coking heater (see fig. 2) and horizontally offset from one another (see fig. 2) so as to form double vertical columns (34, 36);

Art Unit: 1764

wherein the heater tubes are linked by tube bends (40) to form a bundle; and
a plurality of burners (42, 44) located on each side of the heater tubes.

With respect to claims 26 and 29, Barnett et al. further discloses wherein the horizontal tubes (34, 36) linked by tube bends (40) extend from inlets at I-1, I-2, I-3, I-4, as seen at the top in figure 2, and to outlets at O-1, O-2, O-3, O-4 as seen at the bottom in figure 2.

With respect to claims 27 and 30, it can be seen in figure 2 of Barnett et al. that the tubes are arranged in a serpentine pattern in offset vertical columns (34, 36).

With respect to claims 28 and 31, it can be seen in figure 2 of Barnett et al. that the tubes are horizontally and vertically displaced to have a staggered configuration.

With respect to claim 32, it can be seen in figure 2 of Barnett et al. that the burners (42) are located in a lower portion of the radiant section (14) on each side of the conduit (16, 18) and the side walls (24).

9. Claims 33-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Gibson et al. (US 6,241,855 B1).

With respect to claims 33 and 37, Gibson et al. discloses a delayed coking heater comprising (as seen in figure 5):

- a convection section (7);
- a radiant section (21) adjacent to the convection section (7);
- a feedstock heater inlet at the bottom of the radiant section (21) (col. 2, lines 27-57);

Art Unit: 1764

a heating conduit (25) in the radiant section (21) and it can be seen in figure 5 that horizontal heater tubes (shown in cross-section) are continuously and sequentially linked by tube bends which allow feedstock to flow from the bottom to the top of said heater (col. 4, lines 62-67);

a heater outlet (30) at the top of the radiant section (21); and

a plurality of burners (22) located in a lower portion of the radiant section (21) on each side of the heater tubes (25) (see figure 5).

With respect to claims 35 and 36, it is illustrated in Gibson et al. figure 5 wherein the heating conduit (25) comprises a plurality of double vertical staggered columns.

With respect to claim 38, it is illustrated in Gibson et al. figure 5 wherein said tubes are arranged in two offset vertical columns and disclosed as having a serpentine pattern (col. 4, lines 62-67).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barnett et al. (US 6,237,545 B1).

Barnett et al. discloses wherein the angle C, formed between the center of one tube as the vertex extending to the two closest tubes in the vertical column (the bend portion) is between horizontal (0°) and vertical (90°) (col. 2, lines 24-27). Since this

Art Unit: 1764

range encompasses the somewhat narrower range claimed, about 80° and 40°, it is in itself sufficient to establish a prima facie case of obviousness. MPEP 2144.05 I.

12. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gibson et al. (US 6,241,855 B1).

Gibson et al. illustrates wherein a coking heater comprises both a plurality of single column tube bundles (figures 2 and 4) and a plurality of "serpentine" or double tube bundles (figures 3 and 5), but does not explicitly disclose wherein double as well as single tube bundles are in the same heater. Despite the absence of such an explicit illustration, Gibson et al. does disclose wherein single and double tube configurations are merely different embodiments of the same coking heater tubes (col. 5, lines 14-26). It would have been obvious to one of ordinary skill in the art at the time the invention was made to exchange a single or double structure with its equivalent embodiment as these configuration of heating tubes have been established by Gibson et al. as equivalent. The examiner notes that applicant's definition of a "conventionally arranged single column planar tube bundle" (as illustrated in applicant's figure 5) reads on Gibson et al.'s "single row" tube bundle (fig. 1, 2, 4).

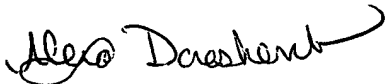
Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 703-305-0074. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.

Art Unit: 1764

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Alexa Doroshenk
Patent Examiner
Art Unit 1764

October 23, 2003